THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 22

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

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Ex parte ROBERT J. GOVE and JEFFREY B. SAMPSELL

_____

Appeal No. 1997-1374
Application No. 08/415,101

_____

ON BRIEF

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Before HAIRSTON, KRASS, and HECKER, ***Administrative Patent Judges.***

HECKER, ***Administrative Patent Judge***.

DECISION ON APPEAL

This is a decision on appeal from the final rejection of claims 1 through 7 and 9 through 21, all claims pending in this application.

The invention relates to grouping spatial light modulator elements (SLM's) in an ordinal format to form picture elements in a cardinal format. In particular, referring to Figure 17, SLM elements of the digital micromirror device (DMD) type are arranged in an ordinal format. That is, a row of DMD elements, e.g. 59, 61, are arranged directly above DMD elements of an adjacent row, e.g. 63 and 65. The DMD's are grouped to form sub-arrays, e.g. sub-arrays 58, 60, 62, 64, and these sub-arrays are arranged in a cardinal format. That is, a staggered format wherein a sub-array in one row, e.g. sub-array 58, is aligned between two sub-arrays of an adjacent row, e.g. sub-arrays
62 and 64. Thus, Appellants indicate, the reduced efficiencies inherent in physically constructing a cardinal format are avoided by physical construction in ordinal format, while obtaining the better horizontal resolution by grouping and operating sub-arrays in the cardinal format.

Representative independent claim 1 is reproduced as follows

1. A method for controlling an orthogonal array of spatial light modulator elements, the method comprising the steps of:

a. grouping said orthogonal spatial light modulator elements into sub-arrays in horizontal rows such that one said sub-array is horizontally between two adjacent sub-arrays in each adjacent row; and

b. controlling each of said modulator elements in each said sub-array such that said modulator elements operate in unison.

The Examiner relies on the following references:

Hornbeck	5,061,049	Oct. 29, 1991
Carlson	5,146,356	Sep. 8, 1992
Mignardi et al. (Mignardi)	5,240,818	Aug. 31, 1993
Hornbeck (Hornbeck 2)	5,280,277	Jan. 18, 1994 (filed Nov. 17, 1992)

Claims 1 through 7 and 9 through 16 stand rejected under 35 U.S.C. § 103 as being unpatentable over Hornbeck in view of Carlson and Mignardi.

Claims 17 through 21 stand rejected under 35 U.S.C. § 103 as being unpatentable over Hornbeck in view of Carlson and Mignardi, and further in view of Hornbeck 2.

Rather than reiterate the arguments of Appellants and the Examiner, reference is made to the brief, reply brief and answer for the respective details thereof.

OPINION

After a careful review of the evidence before us, we will not sustain the rejection of claims 1 through 7 and 9 through 21 under 35 U.S.C. § 103.

The Examiner has failed to set forth a ***prima facie*** case. It is the burden of the Examiner to establish why one having ordinary skill in the art would have been led to the claimed invention by the reasonable teachings or suggestions found in the prior art, or by a reasonable inference to the artisan contained in such teachings or suggestions. ***In re Sernaker***, 702 F.2d 989, 995, 217 USPQ 1, 6 (Fed. Cir. 1983). "Additionally, when determining obviousness, the claimed invention should be considered as a whole; there is no legally recognizable 'heart' of the invention." ***Para-Ordnance Mfg. v. SGS Importers Int'l, Inc.***, 73 F.3d 1085, 1087, 37 USPQ2d 1237, 1239 (Fed. Cir. 1995) (***citing W. L. Gore & Assocs., Inc. v. Garlock, Inc.***, 721 F.2d 1540, 1548, 220 USPQ 303, 309 (Fed. Cir. 1983), ***cert. denied***, 469 U.S. 851 (1984)).

Appellants admit that Carlson teaches a cardinal array of SLM's of the Liquid Crystal Device (LCD) type, and that

Mignardi teaches grouping in a cardinal array (brief-page 5). Also, with respect to the SLM being of the DMD type, we note that Hornbeck teaches known SLM's to be of the DMD or LCD type (column 2, lines 11-18), along with arrays of both cardinal (Figure 31) and ordinal (Figure 34) format. Appellants argue:

> Applicant's Claim 1 recites a method of controlling an **orthogonal** array of spatial light modulator elements that allows an orthogonal array **to achieve** the increased effective horizontal resolution available to **cardinal** array, without the decrease in usable modulator area and contrast ratio that occurs when some modulator structures are fabricated in cardinal arrays (see page 9, lines 3-9 and Fig. 3 of the specification). (Emphasis added.) (Brief-page 8.)

The only direct response we can identify, by the Examiner, to this argument is:

> Contrary to applicant's arguments in their responses, the patent to Mignardi et al. not only suggests a cardinal format for a DMD but also that sub-arrays can be **driven** in unison to create pixels. (Emphasis added.) (Answer-page 3.)

We believe the Examiner's response misses the point. Appellants' sub-arrays are located **in** an **ordinal** array, and are **controlled (driven)** to create a **cardinal** array effect. We

find this totally different from Mignardi, who **starts** with a **cardinal** array which is **driven (controlled)** in sub-arrays to create **pixels**. Claim 1 recites:

> **grouping** said **orthogonal** spatial light modulator elements into sub-arrays in horizontal rows **such that one said sub-array is horizontally between two adjacent sub-arrays in each adjacent row**; (Emphasis added.)

The Examiner has expressed no rational or motivation to control an ordinal array to act as a cardinal array.

Appellants further argue, in their brief and throughout their reply brief, that the claim limitation of "operate in unison" is **totally different** than the "in unison" used by the Examiner, as reasoned from the applied references. Appellants state:

> The applicant's chosen meaning for the term "in unison" is clear. The original specification states, on page 19, lines 6-7, "[a]ll of the elements in a pixel block are controlled in unison such that the pixel block acts like a single pixel" (emphasis added). One claimed embodiment of the invention further specifies that the "address electrodes within each sub-array are electrically connected," a limitation that physically requires the mirror elements to rotate, not merely simultaneously as interpreted by the Examiner, but rather the sub-array "acts like a single pixel" by moving in the same direction and at the same time. (Reply brief-page 2.)

We understand the Examiner's explanation of Hornbeck, that **a line** can be considered to be a sub-array, and that since Hornbeck's line is operated "simultaneously and similarly", one could view this operation as **in unison**. (Answer-page 4.)

The Examiner's analysis is plausible, but different than envisioned by Appellants' disclosure. Both Appellants and the Examiner have presented different and viable interpretations of the ordinary usage of the term "in unison". "However, words of ordinary usage must nonetheless be construed in the context of the patent documents. Thus the court must determine how a person of experience in the field of this invention would, upon reading the patent documents, understand the words used to define the invention." ***Toro Co. v. White Consolidated Industries, Inc.***, 199 F.3d 1295, 1299, 53 USPQ2d 1065, 1067 (CAFC 1999). Thus, we give deference to Appellants' use of the term "in unison" and find this aspect of the claimed invention lacking in the Examiner's rejection.

Accordingly, we find the limitations discussed supra, found in all independent claims, not taught or reasonably suggested by the references of record, and we will not sustain the Examiner's rejection of these claims (claims 1, 9, 15 and 17).

The remaining claims on appeal, all dependent claims, also contain the above limitations discussed in regard to

claims 1, 9, 15 and 17, and thereby, we will not sustain the rejection as to these claims.

We have not sustained the rejection of claims 1 through 7 and 9 through 21 under 35 U.S.C. § 103. Accordingly, the Examiner's decision is reversed.

REVERSED

KENNETH W. HAIRSTON Administrative Patent Judge	)	
ERROL A. KRASS Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
STUART N. HECKER Administrative Patent Judge	)	

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Application No. 08/415,101

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REVERSED

Prepared: June 22, 2001